



Resilience and Durability to Extreme Weather Pilot Project: California Department of Transportation

Resilience and Durability Pilot Projects 2018 – 2020

The Federal Highway Administration (FHWA) partnered with eleven pilot project teams to assess and deploy resilience solutions. This case study is part of a series that summarizes the pilot projects and highlights transportation system resilience efforts at other agencies across the country. For more information, visit

<https://www.fhwa.dot.gov/environment/sustainability/resilience/pilots/extweatherpilot.cfm>.

Summary

The California Department of Transportation (Caltrans) developed a Climate Change Communication Guide to enhance messaging within the department and to external audiences on climate stressors and vulnerabilities within the State.

Key Takeaways

- By conducting vulnerability assessments for all 12 of its Districts, Caltrans was able to develop a communications guide addressing all climate vulnerabilities along the State highway system.
- The guide improves education, outreach, and messaging on climate change and is applicable to transportation agencies beyond Caltrans.
- The guide will help Caltrans and its Districts integrate climate change discussions into planning documents and other deliverables.

Objectives

The primary objective of the pilot was to evaluate the District-level vulnerabilities of the State highway system in California to climate change and develop a tool that Caltrans and other transportation agencies can use to communicate these climate risks. Caltrans sought to produce a communication guide that presents strategies for communicating with internal staff and external partner agencies as well as with the broader public on the topic of climate change to educate, inform, and strengthen collaboration.

An overarching Caltrans objective with the guide was to facilitate the conversation of climate change efforts with internal and external partners. The aim was to elevate the integration of climate change considerations throughout Caltrans and other agencies and organizations that are engaged in climate change related work across the country. This will help Caltrans to proactively plan and incorporate mitigation and resilience into its planning, design, maintenance, programming, and operations.

Scope

Caltrans' pilot project took place between May 2019 and December 2020 and culminated in a 60-page Climate Change Communication Guide (Figure 1). The communication guide is intended to be used by Caltrans and each of its Districts. The guide can also be adapted and applied by other agencies and organizations around the country that aim to enhance resilience and climate change communications. This guide is intended to help Districts communicate with partner organizations and staff who may or may not already be familiar with climate change information, and to help partners make informed decisions about adaptation and mitigation measures based on California's climate vulnerabilities. These climate vulnerabilities include sea level rise, storm surge, drought, increased temperature, changes in precipitation patterns, and increased wildfires. This guide also provides best practices for agencies interacting with members of the public who may not necessarily be familiar with the underlying science of climate change or the importance of taking action to address impacts.

Approach

Vulnerability Assessments

Caltrans performed vulnerability assessments for each of its 12 Districts. These assessments identified areas of high exposure to potential climate change stressors. These assessments provided information on climate risk for Caltrans to integrate into long-range planning and project policies and documents. The assessments used up-to-date climate models to help Caltrans Districts and partners interpret climate change risks to transportation system operations and users. These vulnerability assessments incorporated and identified climate risks and therefore helped Caltrans develop the communication strategies that are included in the Climate Change Communication Guide.

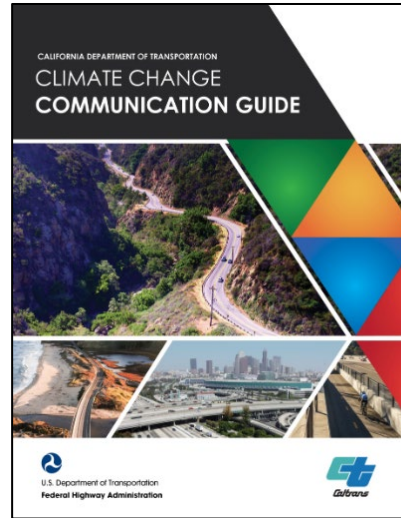


Figure 1. Caltrans Climate Change Communication Guide. Source: Caltrans.

Stakeholder Engagement

To inform the development of the communication guide, Caltrans conducted interviews and surveys with staff from headquarters, all twelve of its Districts, and various divisions. Caltrans engaged representatives from key external partner agencies who contributed valuable input and ideas to the guide. External stakeholders that were engaged included tribal partners, transportation agencies, permitting agencies, metropolitan planning organizations, the California Air Resources Board, the California Coastal Commission, the California Environmental Protection Agency, and the California Natural Resources Agency.

These individuals shared strengths, challenges, and concerns that helped the authors of the communication guide select a focused set of strategies to address the unique challenges of communicating about the range of expected changes in climate in a State as geographically, politically, and culturally diverse as California. The goal was to integrate these perspectives so that as Caltrans continues to develop new climate change tools and guidance, reaching a broad range of audiences will remain at the forefront. Individuals were engaged in routine working group meetings, at conferences, and through information-sharing opportunities such as peer exchanges.

Key Results & Findings

Vulnerability Assessment

The vulnerability assessments performed by Caltrans revealed specific ways that each District is vulnerable to climate change along the State highway system. The findings from these assessments will inform each District's adaptation plans and increase the resilience of the State highway system.

Components of the Guide

The Climate Change Communication Guide contains best practices that agencies, organizations, and others engaged in climate change communication across the country can apply and adapt. The guide presents sample checklists, descriptions, and examples throughout and recommends specific communication channels through text, illustrations, and diagrams. The guide has sections that help Caltrans define its goals, align its messages with its goals, better

understand its audiences, conduct frequent two-way engagement, and measure its successes. The guide also describes best practices for engaging the public. This section of the report includes guidance on simplifying department messages and understanding audiences, tailoring messages, focusing on framing and on local impacts, helping agencies tell real stories, and using effective visualizations. For example, agencies can use appropriate language, be familiar with their audience's knowledge, use high-quality imagery and clear language, and ask audiences for feedback.

The guide offers Caltrans other tools such as recommended communication channels and formats that will help address its climate communication needs. The communication guide includes best practices to “close the communication loop” to share the climate change message with the intended audience(s) and discern whether the message was communicated effectively and accurately (Figure 2). There are also numerous communication checklists that offer guiding principles to follow when agencies strive to improve climate change communications (Figure 3).

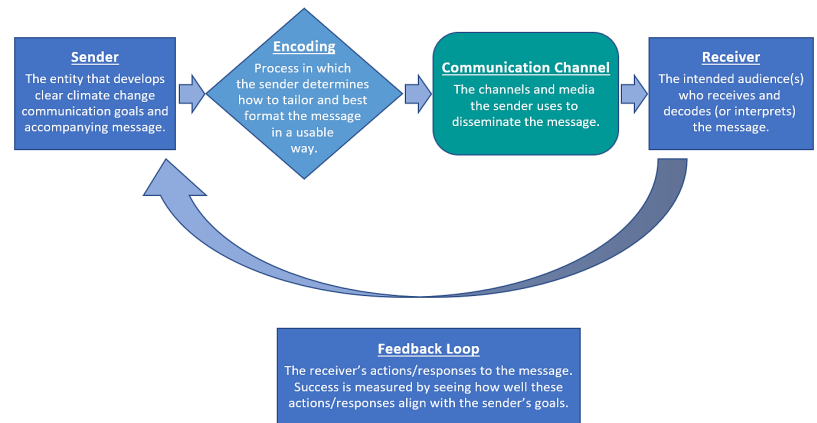


Figure 2. The “closing the communication loop” process. Source: Caltrans.

Other Climate Change Communication Resources in the Guide

The guide also includes useful tools in its appendices. Appendix A provides background information on California’s vulnerabilities to climate change stressors and extreme weather events caused by climate change. It includes summaries of internal and external stakeholder interviews and surveys with each of Caltrans’ 12 Districts expressing unique concerns about Caltrans’ communication strengths and challenges. Appendix B has a copy of the survey questions that Caltrans distributed to various audiences and an internal scoping survey. In this appendix, Caltrans included an interview guide for District staff to use to identify the ways in which climate change is considered internally and communicated externally within the District and to partners.

Caltrans also provides interview guide examples for external partners. Appendix C shares a list of suggested climate change data sources which can help agencies who are developing a central data hub identify places to access authoritative national and State level data. Appendix D offers a list of communication resources that agencies can use to develop their own communication materials. Finally, Appendix E includes a best practices discussion for other transportation agencies that wish to apply the Climate Change Communication Guide. This discussion offers suggestions to help agencies convey their messages clearly and concisely, focus on framing, and tailor their messages.

Best Practices at a Glance: The Public

- ☐ Simplify the message and provide context or explanation where needed:
 - Avoid scientific jargon.
 - Use metaphors and analogies.
- ☐ Focus on framing:
 - Depoliticize the message.
 - Focus on positive messaging.
 - Correct misconceptions.
- ☐ Tailor your message to your audience:
 - Be sensitive of cultural, educational, and political backgrounds.
- ☐ Focus on local impacts.
- ☐ Tell real stories:
 - Use both experiential and statistical evidence.
- ☐ Use effective visualizations:
 - Depict a hopeful future.
 - Avoid cliché images.

Figure 3. Example of a checklist that Caltrans developed to engage the public. Source: Caltrans.

Lessons Learned

With great diversity across California's populations and the variety of climate stressors and extreme weather events the State experiences due to climate change, Caltrans needed a tool to enhance communication and be widely applicable. Therefore, connecting with multiple stakeholders to inform the making of the Caltrans Climate Change Communication Guide was key for ensuring that the product would be useful and widely applicable.

Caltrans engaged internal and external partners in regular forums such as the Climate Change Branch Quarterly Workgroup, District- and headquarters-level communications mediums, and at conferences. The department found that holding regular working group meetings and frequent check-ins was an effective strategy to keep partners engaged. The frequency of these meetings also helped to reinforce the importance of considering climate change and integrating climate planning into various documents and projects both within Caltrans and among external stakeholders.

Another lesson learned was to frame concepts using language that is familiar to the audience it is intended to reach. This is important because the department developed the communication guide to engage people from several different regions of the State and beyond.

Next Steps

As a result of the pilot, Caltrans has identified the following next steps:

- Caltrans will be incorporating climate change considerations into its 2021 Strategic Management Plan.
- Caltrans has developed its Adaptation Priorities Reports. These reports include prioritized lists of potentially exposed assets to climate hazards in each Caltrans District, which will help the department target these assets for improvement in the future.
- There is ongoing communication between the department's headquarters and all twelve District offices to promote the incorporation of climate change considerations into department projects.

For More Information

Resources

Caltrans Final Pilot Report:

<https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/caltransclimatecommunicationguidepdf-a11y.pdf>

Caltrans Climate Change Website:

<https://dot.ca.gov/programs/transportation-planning/office-of-smart-mobility-climate-change/climate-change>

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